

IN THE CLAIMS:

1 1. A programmable driver/equalizer for overcoming InterSymbol Interference (ISI)
2 and other transmission impairments in a variety of transmission media, comprising:

3 (a) a controllable driver set coupled to a transmission media;

4 (b) a transversal filter receiving a data input signal and coupled to the transmission
5 media, the filter having programmable filter coefficients; and

6 (c) means for altering the frequency response of the controllable driver set to match
7 the inverse of the frequency response of the transmission media.

1 2. The programmable driver/ equalizer of Claim 1 further comprising:

2 (d) means providing constant output peak amplitude on the transmission
3 media independent of the programmable filter coefficients.

1 3. The programmable driver/equalizer of Claim 1 further comprising:

2 (e) logic means for switching the transversal filter and controllable drivers off
3 high capacitance nodes when the programmable filter coefficients are inactive.

1 4. The programmable driver/equalizer of Claim 1 further comprising:

2 (f) means for reducing the (ISI) of the controllable driver set when the
3 programmable filter coefficient are active.

1 5. The programmable driver/equalizer of Claim 1 further comprising:
2 (g) means responsive to the programmable filter coefficients providing control
3 signals for matching the controllable driver set output to the inverse of the transmission media.

1 6. The programmable driver/equalizer of Claim 1 further comprising:
2 (h) means for storing a present data input signal bit and a history of at least
3 two past data signal input bits in the transversal filter.

1 7. The programmable driver/equalizer of Claim 1 further comprising:
2 (i) shift register elements in the transversal filter providing time delays in
3 processing the data input signal.

1 8. The programmable driver/equalizer of Claim 1 further comprising:
2 (j) buffer and latch means in the transversal filter for storing data input
3 signals in time sequence.

1 9. The programmable driver/equalizer of Claim 1 wherein the transversal filter is
2 described by $H(Z) = Ab_0 + Ab_1Z^{-1} + Ab_2Z^{-2} + \dots + Ab_nZ^{-n}$ where numerical value of the
3 coefficients are set by register values in A and B coefficient setting circuits connected to the
4 transmission line.

1 10. The programmable driver/equalizer of Claim 1 wherein the transversal filter is a
2 finite infinite response (FIR) filter.

1 11. The programmable driver/equalizer of Claim 1 wherein the controllable driver set
2 comprises weighted current drivers.

1 12. The programmable driver/equalizer of Claim 1 wherein the transversal filter
2 controls the activation of the controllable driver set.

1 13. The programmable driver/equalizer of Claim 1 wherein the programmable filter
2 coefficients are set based on the characteristics of the transmission media, speed of transmission,
3 and characteristics of a receiving unit.

1 14. The programmable driver/equalizer of Claim 1 wherein the coefficients of the
2 filter are altered in small increments and matched to each other.

1 15. The programmable driver/equalizer of Claim 1 wherein the driver out peak
2 amplifier is constant, independent of programmable coefficient selection.

1 16. A method for overcoming InterSymbol Interference (ISI) and other various
2 transmission impairments in a variety of transmission media, comprising the steps of:

3 (a) connecting the controllable driver set to an input node and to a transversal
4 filter including programmable coefficients;

5 (b) biasing the controllable driver set for constant output peak amplitude,
6 regardless of coefficient settings; and

7 (c) altering the coefficients of the transversal filter to vary the driver set
8 output to provide a frequency response which is the inverse of the transmission medium.

1 17. The method of Claim 16 further comprising the steps of:

2 (d) storing digital input pulses in the transversal filter as time delay units.

1 18. The method of Claim 16 further comprising the steps of:

2 (e) enabling power settings of the controllable driver set to be used for all
3 possible coefficient possibilities.

1 19. The method of Claim 16 further comprising the step of:

2 (f) reducing self-induced intersymbol interference from the drivers by the
3 drive strength of the output stage.

1 20. The method of Claim 16 further comprising the steps of:

2 (g) switching off paths to high capacitance nodes in the driver circuit when
3 the coefficients are inactive to minimize ISI.

1 21. The method of Claim 16 further comprising the steps of:

2 (h) selecting a combination of control bits for the coefficient setting means to
3 select the appropriate frequency response for the driver according to the various transmission
4 medium conditions.

1 22. The method of Claim 16 wherein the controllable driver set is plural current mode
2 differential drive circuits.

1 23. A program medium, executable in a computer system, for overcoming
2 InterSymbol Interference (ISI) and other transmission impairments in a variety of transmission
3 media, the medium comprising:

4 (a) program instructions in the medium for connecting the controllable
5 driver set to an input node and to a transversal filter including programmable coefficients;

6 (b) program instructions in the medium for biasing the controllable driver set
7 for constant output peak amplitude, regardless of coefficient settings; and

8 (c) program instructions in the medium for altering the coefficients of the
9 transversal filter to vary the driver set output to provide a frequency response which is the
10 inverse of the transmission medium.

1 24. The program medium of Claim 23 further comprising:

2 (d) program instructions in the medium for storing digital input pulses in the
3 transversal filter as time delay units.

1 25. The program medium of Claim 23 further comprising:

2 (e) program instructions in the medium for enabling power settings of the
3 controllable driver set to be used for all possible coefficient possibilities.

1 26. The program medium of Claim 23 further comprising:
2 (f) program instructions in the medium for reducing self-induced intersymbol
3 interference from the drivers by the drive strength of an output stage.

1 27. The program medium of Claim 23 further comprising:
2 (g) program instructions in the medium for switching off paths to high
3 capacitance nodes in the driver circuit when the coefficients are inactive to minimize ISI.

1 28. The program medium Claim 23 further comprising:
2 (h) program instructions in the medium for selecting a combination of control
3 bits for the coefficient setting means to select the appropriate frequency response for the driver
4 according to the various transmission medium conditions.

1 29 The programming medium of Claim 23 further comprising:
2 (i) program instructions in the medium for biasing the controllable driver set
3 for constant output peak amplitude, regardless of coefficient settings; and
4 (j) program instructions in the medium for altering the coefficients of the
5 transversal filter to vary the driver set output to provide a frequency response which is the
6 inverse of the transmission medium.

1 30. The programming medium of Claim 23 further comprising:
2 (k) program instructions in the medium for storing digital input pulses in the
3 transversal filter as time delay units.

4 31. The programming medium of Claim 23 further comprising:

5 (l) program instructions in the medium for enabling power settings of the
6 controllable driver set to be used for all possible coefficient possibilities.

1 32. The program medium of Claim 23 further comprising:

(m) program instructions in the medium for reducing self-induced intersymbol interference from the drivers by the drive strength of the output stage.

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